

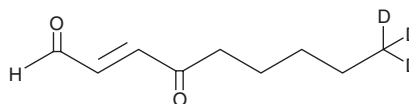
# Product Information



## 4-oxo 2-Nonenal-d<sub>3</sub>

Item No. 10004174

<b>Formal Name:</b>	4-oxo-2E-nonenal-d <sub>3</sub>
<b>Synonyms:</b>	4-ONE-d <sub>3</sub>
<b>MF:</b>	C <sub>9</sub> H <sub>14</sub> D <sub>3</sub> O <sub>2</sub>
<b>FW:</b>	157.2
<b>Chemical Purity:</b>	≥98%
<b>Deuterium Incorporation:</b>	≤1% d <sub>0</sub>
<b>Stability:</b>	≥6 months at -80°C
<b>Supplied as:</b>	A solution in methyl acetate



### Laboratory Procedures

4-oxo 2-Nonenal-d<sub>3</sub> (4-ONE-d<sub>3</sub>) contains three deuterium atoms at the terminal methyl position. It is intended for use as an internal standard for the quantification of 4-ONE by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that 4-ONE-d<sub>3</sub> be stored as supplied at -80°C. It will be stable for at least six months.

4-ONE-d<sub>3</sub> is supplied as a solution in methyl acetate. To change the solvent, simply evaporate the methyl acetate under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as ethanol, DMSO, and dimethyl formamide (DMF) purged with an inert gas can be used. The solubility of 4-ONE-d<sub>3</sub> in these solvents is approximately 50 mg/ml in ethanol and approximately 25 mg/ml in DMSO and DMF.

4-ONE-d<sub>3</sub> is used as an internal standard for the quantification of 4-ONE by stable isotope dilution MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

4-ONE is a lipid peroxidation product derived from oxidized ω-6 polyunsaturated fatty acids such as arachidonic and linoleic acid.<sup>1,2</sup> It exhibits various biological activities such as cytotoxicity, growth inhibiting activity, genotoxicity, and chemotactic activity and has been widely used as a marker of lipid peroxidation.<sup>1-3</sup> 4-ONE is a more recently identified product of lipid peroxidation.<sup>4-6</sup> It actively modifies histidine and lysine residues on proteins and causes protein cross-linking.<sup>7,8</sup> 4-ONE also modifies 2'-deoxyguanosine, further implicating lipid peroxidation in mutagenesis and carcinogenesis.<sup>4</sup>

### References

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3. Sodum, R.S. and Chung, F.-L. *Cancer Res.* **48**, 320-323 (1988).
4. Rindgen, D., Nakajima, M., Wehrli, S., *et al. Chem. Res. Toxicol.* **12**, 1195-1204 (1999).
5. Lee, S.H. and Blair, I.A. *Chem. Res. Toxicol.* **13**, 698-702 (2000).
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8. Zhang, W.-H., Liu, J., Xu, G., *et al. Chem. Res. Toxicol.* **16**, 512-523 (2003).

### Related Products

4-oxo 2-Nonenal - Item No. 10185 • 4-hydroxy Nonenal - Item No. 32100 • 4-hydroxy Nonenal Mercapturic Acid - Item No. 32110 • 4-hydroxy Nonenal-d<sub>3</sub> - Item No. 332101 • 4-hydroxy Nonenal Glutathione-d<sub>3</sub> - Item No. 9000876 • trans-4,5-epoxy-2(E)-Decenal - Item No. 10004257

**WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY; NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

#### MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent *via* email to your institution.

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